

Claims

We claim:

1. An electronic structure, comprising:

a metallic plate;

a mineral layer bonded to the metallic plate; and

an adhesion promoter layer bonded to the mineral layer.

2. The structure of claim 1, wherein the mineral layer includes a mineral selected from the group consisting of silicon dioxide, silicon nitride, and silicon carbide.

3. The structure of claim 1, wherein the mineral layer has a thickness between about 50 angstroms and about 2000 angstroms.

4. The structure of claim 1, wherein the metallic plate includes a metallic substance selected from the group consisting of stainless steel, aluminum, titanium, copper, copper coated with nickel, and copper coated with chrome.

5. The structure of claim 1, wherein the adhesion promoter layer includes an adhesion promoter selected from the group consisting of a silane, a titanate, a zirconate, and an aluminate.

1 6. The structure of claim 1, wherein the adhesion promoter layer includes a silane selected from
2 the group consisting of 3-glycidoxypropyltrimethoxysilane, 3-glycidoxypropyltriethoxysilane, 3-
3 (2-aminoethyl)propyltrimethoxysilane, and 3-(2-aminoethyl)propyltriethoxysilane.

1 7. The structure of claim 1, further comprising:

2 an electronic carrier;

3 an electronic assembly coupled to the electronic carrier; and

4 an adhesive structure bonded to the adhesion promoter layer, wherein the adhesive

5 structure adhesively couples the metallic plate to the electronic assembly, and wherein the

6 adhesive structure adhesively couples the metallic plate to the electronic carrier.

1 8. The structure of claim 7, wherein the adhesive structure includes a structural epoxy adhesive.

1 9. The structure of claim 7, wherein a coefficient of thermal expansion (CTE) of the metallic

2 plate exceeds a CTE of the electronic assembly.

1 10. A method for forming an electronic structure, comprising:

2 providing a metallic plate;

3 forming a mineral layer on the metallic plate; and

4 forming an adhesion promoter layer on the mineral layer.

1 11. The method of claim 10, wherein the step of forming a mineral layer includes selecting a

2 mineral from the group consisting of silicon dioxide, silicon nitride, and silicon carbide.

1 12. The method of claim 10, wherein the step of forming a mineral layer includes forming a

2 mineral layer having a thickness between about 50 angstroms and about 2000 angstroms.

1 13. The method of claim 10, wherein the step of forming a mineral layer includes sputtering a

2 mineral layer on the clean surface of the metallic plate.

1 14. The method of claim 10, wherein the providing step includes selecting a metallic substance

2 from the group consisting of stainless steel, aluminum, titanium, copper, copper coated with

3 nickel, and copper coated with chrome.

1 15. The method of claim 10, wherein the step of forming an adhesion promoter layer includes

2 selecting an adhesion promoter from the group consisting of a silane, a titanate, a zirconate, and

3 an aluminate.

1 16. The method of claim 10, wherein the step of forming an adhesion promoter layer includes
2 selecting a silane from the group consisting of 3-glycidoxypropyltrimethoxysilane, 3-
3 glycidoxypropyltriethoxysilane, 3-(2-aminoethyl)propyltrimethoxysilane, and 3-(2-
4 aminoethyl)propyltrimethoxysilane.

1 17. The method of claim 10, further comprising:

2 providing an electronic assembly;

3 providing an adhesive material;

4 coupling the metallic plate to the electronic assembly by interfacing the adhesive material
5 between the adhesion promoter layer and the electronic assembly;

6 providing an electronic carrier;

7 coupling the electronic assembly to the electronic carrier; and

8 coupling the metallic plate to the electronic carrier by interfacing the adhesive material
9 between the adhesion promoter layer and the electronic carrier.

1 18. The method of claim 17, wherein the step of providing an adhesive material includes

2 providing a structural epoxy adhesive.

1 19. The method of claim 17, wherein the step of providing a metallic plate includes providing a

2 metallic plate having a coefficient of thermal expansion (CTE) that exceeds a CTE of the

3 electronic assembly.